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A DEVELOPMENT PLAN FOR
CAROLINA BEACH
 NORTH CAROLINA

North Carolina State Lottery
 Raleigh



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THE TOWN OF CAROLINA BEACH, NORTH CAROLINA

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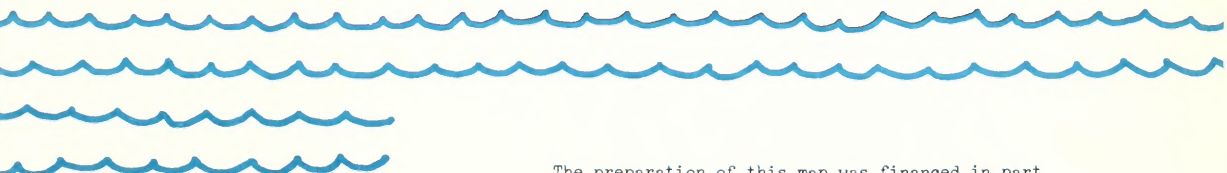
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A DEVELOPMENT PLAN FOR

CAROLINA BEACH

NORTH CAROLINA



The preparation of this map was financed in part through an urban planning grant from the Housing and Home Finance Agency, under the provisions of Section 701 of the Housing Act of 1954, as amended.

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INTRODUCTION

During 1958 the Town Council of Carolina Beach became extremely interested in starting a City Planning Program. The need for such a program was emphasized even more after Hurricane Helene caused extensive wind and water damage to the Carolina Coast. Carolina Beach and the greater region of New Hanover County were declared a Disaster Area by the President after the hurricane. As a result of this declaration, the town became eligible to receive a Federal Urban Planning Assistance Grant for making studies and plans to guide its future development. This report, therefore, is in part financed through an urban planning grant from the Housing and Home Finance Agency, under the provisions of Section 701 of the Housing Act of 1954, as amended.

Carolina Beach serves several different functions. It is a place of permanent residence for a number of families, it is a summer resort for tourists and vacationers, and it is located in such a manner that it becomes a target for hurricanes. Each of these functions provides Carolina Beach with different planning and development problems: Problems of providing the necessary residences, schools, utilities, commercial services, recreation and other needs of the permanent year-round population; problems of providing circulation, housing, recreation and amusement facilities for the summer vacationers and tourists; and problems of protecting buildings and structures from the damages of hurricanes.

CHAPTER I

LAND-USE ANALYSIS: ITS FORM AND CHARACTER

During the spring of 1959 a survey of existing land use was made and the information transferred to base maps for planning purposes. This survey provided the basic information concerning the type and extent of development within and around Carolina Beach. During the summer of 1959, a house-to-house population survey was made in order to more accurately determine the number of people which the city serves. This survey also provided an opportunity to secure information concerning local attitudes and desires for the development of the town. These two surveys provided the basic information from which this planning study was developed.

The results of the land-use survey are shown on the accompanying map, "Detailed Land-Use Map" Carolina Beach, 1959. This map indicates the location and extent of all residential and commercial land uses as well as all the civic services such as the school, library, recreation and other areas. Since the population of Carolina Beach varies so greatly from its permanent population during the winter to its transient population during the summer, land uses were differentiated according to whether they were devoted to permanent or seasonal activities.

As is true with most beach resorts, the form which the Town of Carolina Beach takes is linear. Development runs parallel to the beach front increasing in depth from the ocean at the Central Business District. The town has formed in this manner because it has developed along and around two different points of attraction: the beach, the Central Business District or central point of activity.

The form is affected by two natural features which cut into the land: Carolina Lake and Myrtle Sound. Carolina Lake is used only on the east side for commercial recreation. Myrtle Sound provides access for deep sea fishing boats at the Municipal Dock and for water skiing along the narrow ten foot access channel. Neither of these features has been taken into sufficient consideration in the development of the town, and each affects the circulation pattern of the town in an adverse manner. Carolina Lake forces traffic on Lake Park Boulevard, the only primary through street, to the curve around it to the south. Myrtle Beach Sound, on the other hand, leaves the northern extension of the beach with only two access roads, neither of which is of sufficient width to handle efficiently and safely all the traffic interested in moving north along the beach.

Carolina Lake

Carolina Lake, which serves as a reservoir for rain run-off from the surrounding areas, has been neglected as a natural asset within the city. A development plan for the lake areas was prepared in 1945, but nothing has been done to implement these plans. During Hurricane Hazel in 1954

CAROLINA BEACH

NORTH CAROLINA

DETAILED LAND USE MAP
1959

LAND USES

RESIDENTIAL
(SINGLE LIVING UNITS)[†]
(1-10 " ")
(10-25 " ")
(25+ " ")

T = TRAILER
* SMT. BDRM. SFT. CLOSTAGE

COMMERCIAL

(TRADE)[†] GROCERY, FISH, ABC,
APPLIANCE, SFT. DRUG, CLOTHING,
AUTO SERVICE, BUILDING SUPPLY,
MEAT PT.

(PERSONAL SERVICE)[†]
RESTAURANT, CAFE, BEAUTY SALON,
BARBER, LAUNDRY

(PROFESSIONAL SERVICE)[†]
DOCTOR, REAL ESTATE, BANK

(AMUSEMENTS)[†] RODEO, BASKET
BALL, THEATRE, BALL, FISHING,
PIER, CONCESSIONS

COMMUNITY FACILITIES

BD[†] BOARD WALK
CC[†] CHAMBER OF COMMERCE
CH[†] CHURCH
LIB[†] LIBRARY
P[†] PLAY AREA

SEASONAL PERMANENT

○ ●
○ ●
○ ●
⊙ ⊙

■ ■
□ ■
■ ■
■ ■

SCALE IN HUNDRED FEET

PREPARED FOR
COUNTY OF CURRUMBER, NORTH CAROLINA
BY THE
DEPARTMENT OF COMMUNITY AND LOCAL GOVERNMENT
DIVISION OF COMMUNITY PLANNING

FORMER 1051

THE POSITION OF THIS MAP HAS BEEN ESTABLISHED BY MEASURING AN 8.5-MILE STRIP OF THE COASTLINE AND THEN DIVIDING THEREON INTO 100 SECTIONS BY SECTION 100 OF THE PLATING ACT OF 1842, AS AMENDED.





CAROLINA BEACH

ATLANTIC OCEAN

the ocean broke through the beach to the lake; as a result, the area has been looked upon as rather dangerous to develop. With progress being made by the Corps of Engineers in the actual development of beach protection, however, this problem should be adequately remedied.

The major characteristics of development within the Town of Carolina Beach is the high density to which the land has been developed with little concern for (1) fire hazard, (2) off-street parking or (3) community appearance. Large structures have been built of frame construction immediately adjoining each other on small fifty foot lots. In most cases, little or no parking space is provided. Houses, built without pilings, are crowding the beach and the sound regardless of the risk of flood and wave action from storms and hurricanes. This highly compact development is true of the Central Business District as well as the residential areas.

Planting

One of the most notable characteristics of development within Carolina Beach is the almost complete absence of vegetation. In part this has been due to the ravages of hurricanes and salt water flooding, but there is also good indication that lack of interest on the part of the individual property owner is equally responsible.

Amusement Area

The character of the amusement area, besides being tightly developed, is one of incompatible uses. There are no buffer strips isolating incompatible uses so that noisy activities such as rides, carnival type amusements, beer parlors, and dance halls very often adjoin residential structures. It would seem that a better relationship between housing, children's rides and amusements and beer parlors and dance halls would be inductive to a more pleasant holiday according to the age and inclination of the individual tourist.

Beach

The compact and crowded manner in which the town has been developed presents a very serious problem in regard to the amount of beach space which is available. The beach is a narrow strip running the 2.5 mile length of the town. This strip is considerably reduced during the high tide. The inadequacies of the beach are felt most at the Central Business District where the city provides life guards. This small area cannot possibly hold all the vacationers who would come out and enjoy the ocean if more space were available on the beach.

Parking

Since the need for parking has only recently been recognized, the town has no established policy as to whether off-street parking is a public or a private responsibility. The city has one off-street

parking lot near the City Hall, all other parking is located on town streets. Future parking needs have not been planned for at this time.

Schools

The Town of Carolina Beach has one elementary school which serves the entire area down to Fort Fisher. It completely occupies a town block on Fourth Avenue between Atlanta and Clarendon. All high school students take the school bus into Wilmington. Within the immediate future there is little reason to believe that Carolina Beach will need more than one elementary school.

Recreation

The Town of Carolina Beach has an active Recreation Commission with a year round program. A part-time recreation director is used to provide recreation activities. The auditorium at the City Hall is used for basketball and socials. However, outdoor recreational areas are very limited. Two small play lots have been developed: one behind City Hall and the other on the water tower property. Each of these suffers in the summer from the lack of shade. Two tennis courts, both in poor condition, are located on the water tower property. The town has no other recreation area except for an undeveloped play lot behind the elementary school.

Water Supply

"Domestic water supply is provided through a municipal system which serves practically the entire community. The source of supply is five deep wells. The location of four of these is such that no physical damage has been experienced from hurricanes, other than temporary disruption of the electrical power. Emergency standby gasoline engines are provided at each of the wells and are capable of handling emergency power failures. The fifth well, adjacent to Carolina Lake at the southern limits of the city, has experienced flooding. Water storage facilities include a 100,000 gallon elevated storage tank and a 1,000,000 gallon ground storage tank. The latter was constructed subsequent to the 1954-1955 hurricanes and appears to be adequately protected against flooding and damage during hurricanes. While routine chlorination of the water supply is not practiced, the city does maintain five hypochlorinators for emergency use.

"Past hurricanes have caused extensive damage to the water-distribution system and flooding of one well. In 1954, the high tides and wave action accompanying Hurricane Hazel caused a break-through in the narrow strip of land between the ocean and Carolina Lake. The well located in this area was inundated, and a section of the distribution system was washed out. The destroyed section of the system and the numerous broken service connections and the debris-smashed hydrants resulted in the loss of the entire water supply to the city. Replenishment of the water supply was accomplished by valving off the beach area and limiting service to a portion of the city. As a result of this experience, the city adopted the policy of valving off the beach area whenever such storms are imminent.

This policy was carried out, prior to each of the three hurricanes that struck Carolina Beach in 1955, with good results. While damage to the distribution system reoccurred in each case, it was possible to maintain an adequate supply to meet emergency requirements.

Sewage Collection and Treatment

"The Carolina Beach sewage system provides service to most parts of the city. The system includes two small lift stations adjacent to the beach area and a main pumping station. No treatment facilities are provided. The sewage is discharged directly to the Cape Fear River. There are no industries contributing wastes to the system other than those establishments normally associated with this type of community.

"Hurricane damage to the sewage system has in the past consisted primarily of sanding of the sewers and lift stations and wetting of the electric motors. The break-through from the ocean to Carolina Lake in 1954 washed out a section of the sewer serving the area south of the lake and required the installation of a temporary lift station to convey sewage back into the main collecting system.

"Those areas not now sewered utilize septic tanks for the disposal of wastes. Hurricane damage to such installations can create public health hazards when tank contents are displaced by flooding. The solution is one of long-range planning involving the extension of sewers to serve these areas. Future planning must also give proper consideration to the provision of adequate treatment facilities. Re-establishment of the beach and dune system should provide additional protection to the collection system and reduce the amount of sanding that will occur during hurricanes.

"The Carolina Beach shellfish growing areas are not considered to be of interstate importance, but are considered to be of great local significance. So long as the cities of Wilmington and Carolina Beach continue to discharge raw sewage to the river, it will be necessary to restrict areas from the taking of shellfish to protect the public health." (*1)

Land Use

The following tables provide the number of acres which are contained within the City Limits of Carolina Beach and indicates the particular activity for which the land is used.

There are 706 acres within the City Limits, of which 50 percent are used for some type of activity and are designated as developed land. The majority of vacant land is already platted into separate lots. The United States Government owns about fifty acres of land in the southwest corner of the city as a buffer zone for the Sunny Point Arsenal.

TABLE 1

LAND ACREAGES WITHIN CAROLINA BEACH CITY LIMITS

<u>Type of Land Use</u>	<u>Acres</u>	<u>Percent of Land Within City Limits</u>
Developed Land	338.5	47.9
Vacant Platted	287.2	40.7
Vacant Unplatted	18.3	2.6
Water Areas*	10.7	1.5
Government**	<u>50.9</u>	<u>7.3</u>
Total Land Within City Limits	705.7	100.0%

* The land indicated in governmental use is the United States Army, Sunny Point Buffer Zone.

** The acreage indicated as water areas includes Carolina Lake and a portion of Myrtle Grove Sound, but does not include any ocean areas.

TABLE 2

DEVELOPED LAND-USE ACREAGES FOR CAROLINA BEACH

<u>Type of Land Use</u>	<u>Acres</u>	<u>Percent of Developed Land</u>
Residential, total	125.9	38.2
Seasonal	74.7	22.1
Permanent	51.2	15.1
Commercial Trade, total	3.8	1.1
Seasonal	.8	.2
Permanent	3.0	.9
Amusement Trade, total	2.9	.9
Seasonal	2.0	.6
Permanent	.9	.3
Personal Services, total	2.0	.6
Seasonal	1.6	.5
Permanent	.4	.1
Professional Services	.6	.2
Civic Services	6.8	2.0
Streets	157.9	46.6
<u>Beach</u>	<u>38.6</u>	<u>11.4</u>
Total Developed Land Within the City Limits	338.5	100.0

Table 2 shows a break down of all the developed land within the City Limits as of 1959 according to different types of land uses. Figures are presented in acres and as a percent of all developed land within the city. Residential land, which is the second largest use of land, utilized 126 acres or 38.2 percent of all developed land. Most of this or approximately 60 percent is developed for seasonal residential purposes.

As would be expected, commercial uses are also primarily seasonal in nature. Nearly three times as much land is used during the summer tourist season for commercial stores, amusements and services as during the winter. Land for civic or governmental services utilize nearly seven acres. This is generally considered a small amount since it includes the land for schools and recreational areas.

The largest use of land within the town is for streets, which take up 157.9 acres, or nearly half of the developed land. One reason this figure is so high is that nearly all of the vacant land is platted, and many of these streets are developed. There is approximately 40 acres of beach land or 11.4 percent of all developed land.

It is impossible to make an analysis of these land acreage figures since there are no other beach towns with which a comparison may be made. There is some general agreement between these figures and those for the non-resort central city. Carolina Beach has about the same percentage of developed land in residential (38.2%) and commercial (2.8%) as the non-resort central city. But it is impossible to tell whether this is just a coincidence or whether there may be some relation between these figures.

SOURCE: *1. "Report on the Public Health Aspects of Hurricane Damage to Carolina Beach, New Hanover County, North Carolina," as prepared by the Public Health Service, Region III, Charlottesville, Virginia, March 22, 1957.

CHAPTER II

POPULATION SURVEY OF CAROLINA BEACH, SUMMER, 1959

This chapter presents the results of a population survey of Carolina Beach made during the month of July, 1959. This survey was made to obtain the basic population and economic data needed for the preparation of development plans. This survey was prepared by the Community Planning Division of the Department of Conservation and Development and was in part financed through an urban planning grant from the Housing and Home Finance Agency.

It was important to make as complete a survey of Carolina Beach as possible because of the complicated nature of the development problems and the limited amount of economic and population data available on Carolina Beach. Data obtained during this survey included the number of permanent residents, seasonal residents, age and occupation of residents; information on rental housing and home ownership, etc. No attempt was made to interview the tourists or vacationers coming into Carolina Beach only to spend the day and not residing there during the night.

The questionnaire was intended primarily for interviews with households, including all rental units for vacationers and guests. Owners of commercial establishments were interviewed to obtain their suggestions for improving Carolina Beach (Question No. 14). Interviews in the commercial district were made by the staff of the Division of Community Planning, and interviews with households were made by three residents of Carolina Beach. The survey was made during the week days of the last two weeks in July. These two weeks were not considered the best part of the summer season since there was great humidity and intermittent rain throughout the State.

QUESTION NO. 1 - Do you live in Carolina Beach year round? (yes)___(no)___

REPLIES

	<u>Number</u> <u>Interviewed</u>	<u>Number on</u> <u>Land Use Map</u>	<u>Percent</u> <u>Interviewed</u>
(yes) Permanent	331	405	81.7 %
(no) Seasonal	256	680	37.6 %
TOTAL	587	1085	54.1 %

A total of 587 interviews were made of residential households of either a permanent or a seasonal nature. This was 54.1 percent of all possible residential structures and generally considered to be a good sample of the total population. A larger percentage, or 81.7 percent, of the seasonal households were interviewed. It was difficult to obtain more interviews within the limits of the survey because of the difficulty of finding people at home. The percentage of seasonal households interviewed was much lower since these persons were more apt to be out enjoying their vacations and since some of the cottages might be vacant for that particular day or week.

QUESTION NO. 2 - If you live in Carolina Beach only part of the year, when do you arrive in Carolina Beach? _____ When do you leave Carolina Beach? _____

REPLIES

<u>Length of Stay</u>	<u>Number</u>	<u>Percent</u>
Less than a week	26	10.1 %
One week	80	31.3 %
Two to four weeks	33	12.9 %
Two to four months	56	21.9 %
Five to nine months	19	7.4 %
Off and on	26	10.1 %
No reply	<u>16</u>	<u>6.3 %</u>
TOTALS	256	100.0 %

Nearly one-third or 31.3 percent of all seasonal households indicated that they stayed one week in Carolina Beach. The next largest group or 21.9 percent were those persons staying from two to four months. Not all of the persons staying in Carolina Beach from two to four months were here for vacations, for they included many persons who came during the summer to manager the rental housing, commercial, and amusement facilities.

The number of persons coming to Carolina Beach from time to time, or as they replied, "off and on during the year", according to the weather and inclination, is rather significant. It is 10.1 percent of all replies, and their personal and household needs should provide a greater year-round shopping demand.

It must be remembered that the answers to this question were obtained from guests living in summer cottages or dwellings. This is important since the answers would be much different if the persons staying at the hotels, motels, and large rooming houses had been interviewed. It might be assumed that people coming to hotels, etc., stay for shorter periods of time, possibly three-day periods, such as week-ends.

QUESTION NO. 3 - In what city do you live when not in Carolina Beach?

REPLIES

The replies to this question are included in the answer to Question No. 10.

QUESTION NO. 4 - How many persons in your family? How many children under five years of age? How many young people under 21 years? How many adults between 21 and 65 years? How many adults over 65 years of age?

REPLIES

	<u>Under</u> <u>5</u>	<u>5 to</u> <u>21</u>	<u>21 to</u> <u>65</u>	<u>Over</u> <u>65</u>	<u>TOTAL</u> <u>No. & Percent</u>
<u>PERMANENT</u>					
Number	86	306	615	54	1061
Percent	8.1 %	28.8 %	58.0 %	5.1 %	100 %
<u>SEASONAL</u>					
Number	73	356	660	13	1102
Percent	6.6 %	32.3 %	59.9 %	1.2 %	100 %
<u>TOTAL</u>					
Number	159	662	1275	67	2163
Percent	7.4 %	30.6 %	58.9 %	3.1 %	100 %

The survey indicated that there are about as many permanent residents as those who came only for the vacation season. Approximately 60 percent of the population are adults from 21 to 65. There

are only about half as many young people from 5 to 21 as there are adults. The age composition of the permanent population in Carolina Beach is what might well be expected in any small city of the state.

QUESTION NO. 5 - What are the occupations of the working members of the family?

REPLIES

<u>Type of Occupation</u>	<u>Number Replying</u>	<u>Percent Replying</u>
Managerial positions (manager rental housing)	70 (45)	25.4 % (16.3 %)
Skilled workers	68	24.6 %
Professional & Semi-professional	44	16.0 %
Unskilled workers	52	18.8 %
Armed Services	<u>42</u>	<u>15.2 %</u>
TOTAL	276	100.0 %

Replies to this question indicate that the labor force is well distributed among different types of occupations. Approximately one-fourth of the replies came from persons who indicated they were in managerial positions and another one-fourth from persons in skilled trades. Each of these occupations provides a higher income than the unskilled trades. One weakness noted was the fact that 15.2 percent are employed by the Armed Services and are always subject to sudden transfer and therefore cannot be counted on to help stabilize the economy.

QUESTION NO. 6 - Are any members of the family retired? _____ How many? _____

REPLIES

Of the permanent population surveyed, 60 persons indicated that they were retired; 31 persons of the seasonal population indicated their retirement. The 60 persons represent 5.7 percent of the permanent population of Carolina Beach. This figure is about the average percentage for any community and indicates that Carolina Beach does not attract persons of retirement age any more than does any other community.

QUESTION NO. 7 - If any member of the family work outside of Carolina Beach, where do they work? _____

REPLIES

<u>Place</u>	<u>No of Replies</u>	<u>Percent of Total Replying to Question No. 5</u>
Wilmington	54	16.8 %
Fort Fisher	39	12.2 %
New Hanover County	6	1.9 %
State	<u>4</u>	<u>1.2 %</u>
TOTAL	103	?

This question indicates that Carolina Beach does have a good percentage of its residents in Wilmington. It also indicates that Carolina Beach is going to lose a number of families when the Air Force housing is finished.

QUESTION NO. 8 - Do you rent cottages, apartments or rooms to summer guests? If yes, how many rooms _____; apartments _____; cottages _____.

REPLIES

	<u>Rooms</u>		<u>Apartments</u>		<u>Cottages</u>		<u>TOTAL UNITS</u>	
	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>
Permanent	352	68.0 %	248	62.6 %	60	50.0 %	660	63.8 %
Seasonal	<u>166</u>	<u>32.0 %</u>	<u>148</u>	<u>37.3 %</u>	<u>60</u>	<u>50.0 %</u>	<u>374</u>	<u>36.2 %</u>
TOTAL	518	50.1 %	396	38.3 %	120	11.6 %	1034	100.0 %

Seventy-four replies to this question showed that 22.3 percent of the 331 permanent residents surveyed provided rental housing units to summer guests, while only 16.0 percent of the 256 seasonal households provided rental housing (41 replies). It will also be noticed that nearly two-thirds of all rental housing is provided either through ownership or management by the permanent population of Carolina Beach.

QUESTION NO. 9 - How many guests do you have renting at this time (today)?

REPLIES

There were a total of 1,452 person renting housing from those persons interviewed during an average day in the last two weeks of July 1959.

QUESTION NO. 10 - From what city or cities do your present guests come to Carolina Beach?

REPLIES

There were 422 different replies from 49 different cities within North Carolina. Of this total 346, or 71.2 percent, came from the Piedmont Area; 135, or 27.8 percent from the Coastal Area; and 5 replies from the Mountain Region. The following cities were mentioned most often: Winston-salem (67), Raleigh (44), Greensboro (42), Durham (38), Charlotte (18), Fayetteville (18), Burlington (17), Wilmington (15), High Point (13), Goldsboro (12), Rocky Mount (10), and Salisbury (10).

There were 111 replies from out of State. The closes to Carolina Beach was South Carolina; the furthest away, Colorado. The following states were mentioned most often: Virginia (20), Ohio (14), Florida, South Carolina, and West Virginia (9), Kentucky, Pennsylvania and Maryland (7) and Illinois, Missouri and Washington, D. C. (5). This indicates that the majority, or 48.6 percent of the out of State guests come from the northeastern states rather than those to the west or south.

QUESTION NO. 11 - What is the largest number of summer guests you can accommodate at one time?

REPLIES

This question was generally interpreted to involve the number of people who were accommodated during a holiday like the fourth of July week-end. Replies indicated that 3,815 persons could be accommodated by those persons interviewed on such a holiday and that this was $2\frac{1}{2}$ times the number of people who were accommodated during an average summer week day.

QUESTION NO. 12 - How many parking spaces do you provide? _____

REPLIES

Replies indicated that 1,073 parking spaces were provided for rental guests. This means that for the average week day approximately one space is provided for every $1\frac{1}{2}$ rental guests and for the holiday one parking space for every four rental guests. An immediate evaluation indicates that this was sufficient parking; however, only an evaluation of the actual location and adequacy of each parking lot would provide the best basis for judgment.

QUESTION NO. 13 - Are you the property owner? _____ If not, in which city does the property owner live? _____

REPLIES

	<u>Permanent</u>		<u>Seasonal</u>		<u>TOTAL</u>	
	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>
Yes	209	63.1 %	97	37.9 %	306	52.2 %
No	103	31.1 %	145	56.6 %	248	42.2 %
No Reply	19	5.8 %	14	5.5 %	33	5.6 %

A total of 209 permanent residents interviewed, or 63.1 %, indicated they owned their own home, which is consistent with the national average of 3 out of every 5 households and in contrast to only 31.1 percent of the seasonal population.

The answer to the last part of this question was not accurate since it often did not indicate ownership as much as the real estate agent who handled the property. The following cities were indicated: Carolina Beach (80), Wilmington (20), other cities (61).

QUESTION NO. 14 - Do you have any suggestions for improving Carolina Beach?

REPLIES

Although all the replies to this question are indicated in terms of the number of replies, it should be remembered that this is no indication of their importance to the future development of Carolina Beach. It is always possible that a single suggestion might be the most important of all.

CLEAN UP - 89 - REPLIES. The suggestion most often mentioned by individuals was that Carolina Beach should clean up. Nearly everything was included in this general recommendation: the lake, piers, sidewalks, beach, streets, vacant lots business district, the restrooms in the movie, and housing in some parts of the city.

PARKING - 75 - REPLIES. The second item most often mentioned was parking. There were 75 different people concerned with parking. Out of the 75 replies, 56 or three-fourths indicated the need for more parking. This was considered to be municipally sponsored parking rather than that provided by individuals or establishments primarily.

Fourteen persons commented on the fact that the time on the existing parking meters was too short for people to come into Carolina Beach and enjoy themselves. It was felt that meters should be changed to a minimum of two hours, or as one person interviewed suggested, "Throw them in the ocean!" Other comments were loading zones should be provided for all boarding houses; parking should not be allowed on narrow streets; parking meters shouldn't be allowed outside the business district.

RECREATION - 74 - REPLIES. The general heading of recreation occasioned the third largest group of replies. Since it is difficult to pick out any primary consideration, all suggestions and the number of persons making the suggestions are indicated below.

Suggestions indicated the need for more grass and shade on playgrounds (9), more recreation for young peoples (9), picnic areas (9), dredging the yacht basin and providing more facilities for boats (7), a public swimming pool (7), a bowling alley (6), a skating rink (6), more recreation facilities for small children (4), playground equipment (3), a recreation building (3), recreation for older people (2), a golf course (2), shuffleboard (2); the following were suggested once: public square dancing and space for onlookers, park and quiet area, recreation director in the summer, park with baseball diamond, horseshoes, benches for sitting, prohibiting children on tennis courts, more boat landings.

MUNICIPAL IMPROVEMENTS - 129 - REPLIES. Suggestions for municipal improvements are listed here as fourth in importance because even though there were more total replies to this question, there are many more different suggestions than to the earlier questions. These suggestions included: spraying more often for mosquitoes (33), improving the drainage ditches (20), paving streets (17), widening streets (6), providing more sidewalks (13), improving garbage collection (10) providing more and better street lights (8), providing public restrooms (8), providing street name markers (5), providing signs such as "Watch for Children" and "One Way" (3), providing house numbering (3), improving curbs and gutters (3), providing public showers (1), improving drinking water (1), and extending sewer lines (1).

CITY AND REGIONAL DEVELOPMENT - 29 - REPLIES. Answers to this question provided suggestions for the general improvement and development of Carolina Beach and the region.

Convention Hall (13), a bridge or ferry at Fort Fisher to Southport (7), pavilion on the beach (5), an open air theater at Fort Fisher (1), restoration of Fort Fisher (1), a way to get to Masonboro Inlet from northern extension (1), an air strip (1).

BEAUTIFICATION - 24 - REPLIES. One person suggested that "What Carolina Beach needs most is a real plan for beautification!" or, as another person put it, "eye appeal!" There were 24 general replies suggesting the beautification of Carolina Beach.

LAW ENFORCEMENT - 17 - REPLIES. The majority of replies stressing law enforcement were suggestions such as "speeding cars should be stopped or traffic shrubs should be enforced (13). Others suggestions were: better police protection (2), a beach patrol (1), more men to enforce the existent laws (1), a patrol of speeding boats (1).

OCEAN AND BEACH - 23 - REPLIES. The suggestion most often made was that the lifeguard area be increased (8); one person said, "We pay our taxes too and should get the same lifeguard service as the boardwalk! One person suggested that buoys be put up and down the beach and telephones to the lifeguard station, that jetties needed to be improved (6), but there was no agreement about sand on the beach, for there were (4) persons who wanted to smooth the sand down so that you can see the ocean while there were only (2) persons who were concerned with building the beach up with sand and (2) persons who suggested building a sea wall.

ZONING AND BUILDING CODE - 10 - REPLIES. There were six persons concerned about the need for a building code and four persons concerned about zoning. The general concern was for an improvement of housing structure and appearance; or as one person stated, "It would allow us to get insurance on our houses"

RANDON REPLIES. More shade - more church activities - free entertainment - restock the ocean with fish - taxes too high - close down all beer parlors - restrictions too strict on public who come to have a good time - bathing suit law is crazy - motor scooters noisy- dance halls so loud, keeps guests awake - need big porches on ocean front cottages - need to get rid of self satisfied attitude - filling station park cars all over sidewalks - no comment - satisfied - prices too high- need baby sitting service - no hitch hiking in city limits - advertise buildings for use when hurricane comes - fill in the lake - cut down trees and shrubs on the corners - put the money for the planning survey in the beach - boardwalk needs to be made more attractive, not so rough - need a civic minded city government - get rid of congestion near city hall - stray dogs need to be picked up - noise cut down after 10:00 P. M. - parking on narrow streets congested - city cut 5 or 6 feet off my property - prices organized on rentals: these were the miscellaneous suggestions made.

POPULATION ANALYSIS AND ESTIMATES

The results of the population survey provided basic information from which a weekday summer population estimate for Carolina Beach can be made. From the detailed land-use map it was determined that only 54.1 percent of all possible residential structures were surveyed.

TABLE 3. A COMPARISON OF STRUCTURES AND INTERVIEWS IN CAROLINA BEACH

	<u>No. of Structures</u>	<u>No. Interviewed</u>	<u>Percent of Structures Interviewed</u>
Permanent	405	331	81.7 %
Seasonal	<u>680</u>	<u>256</u>	<u>37.6 %</u>
TOTAL	1085	587	54.1 %

As was noted earlier the percent of occupants of seasonal structures interviewed was smaller since these people were most often not at home, but out vacationing. Although it is possible that some of these seasonal structures were not being utilized every week of the summer, there is insufficient evidence to make any assumption on such a basis. Therefore, even though there are limitations, it seems reasonable to assume that the people interviewed are a true sample of Carolina Beach's permanent and seasonal weekday population. This provides sufficient basis upon which an estimate of the 1959 summer weekday population for the town can be made.

TABLE 4. SUMMER WEEKDAY POPULATION ESTIMATES FOR CAROLINA BEACH

	<u>Number Surveyed</u>	<u>Extended*</u>	<u>TOTAL</u>
Seasonal Population	1,102	1,828	2,930
Permanent Population	1,061	238	1,299
** Quest Population	<u>1,452</u>	<u>2,487</u>	<u>3,939</u>
TOTAL	3,615	4,553	8,168

* Extended to account for the population not interviewed.

** Quests of seasonal and permanent population interviewed.

Using these assumptions it can be said that Carolina Beach has a summer weekday population of 8,168 persons. However, these estimates do not include the people who come to Carolina Beach to spend the day, nor do they include any persons residing outside the city limits of Carolina Beach.

An estimate of the average summer week-end population of Carolina Beach may be made by assuming that the vehicle volumes at the bridge are directly related or proportionate to the daily population. One traffic count during August, 1959, indicated that Sunday traffic volumes at the bridge are 99.6 percent larger than the weekday volumes. This would mean that the average summer Sunday population is approximately twice the daily estimate, or 16,336.

Using the same method it is possible to determine the average fall population of Carolina Beach. During the fall, weekday traffic counts at the bridge are approximately 37.5 percent less than they are during the summer. Assuming that these traffic counts reflect population totals at Carolina Beach, the fall population of Carolina Beach would have an average weekday population of 5,105.

The primary population growth and development of Carolina Beach is very recent, having taken place since 1940. Census figures of the town are available only since 1920.

TABLE 5

POPULATION FOR CAROLINA BEACH, FEDERAL TOWNSHIP AND NEW HANOVER COUNTY (U.S. CENSUS FIGURES 1920-1950)

<u>Year</u>	<u>Carolina Beach</u>	<u>Percent Increase</u>	<u>Federal Township</u>	<u>Percent Increase</u>	<u>New Hanover County</u>	<u>Percent Increase</u>
1920	-	-	674	-	40,620	27 %
1930	95		792	18 %	43,010	6 %
1940	637	570 %	1,409	78 %	47,935	12 %
1950	1,080	70 %	2,473	76 %	63,272	32 %
1959 *	1,299	20 %				

* Estimate made from the results of the population survey, summer, 1959.

It is extremely difficult to estimate the future growth of small towns with such specialized functions as Carolina Beach, a resort town. Carolina Beach grew extensively from 1940 to 1950, but the hurricanes have stopped this growth. There is little to indicate from these figures that Carolina Beach's population growth has followed that of New Hanover County, but there is some

parallel with Federal Township of which it is a dominating element.

Since part of Carolina Beach's past growth has been hampered by the effects of hurricanes during 1954, 1955 and 1957, the most logical assumption would be that the permanent population will increase from 1960 to 1980 at the same numerical rate as it has from 1920 to 1959, which was 431 persons per decade. This would mean that Carolina Beach would have a permanent population of 2,160 persons in 1980, or an increase of 861 persons.

It is possible to estimate the 1980 summer weekday and week-end population by assuming that the proportion of seasonal persons to permanent persons will be the same in 1980 as was determined for 1959. With this assumption, the Town of Carolina Beach would have an average summer weekday population of approximately 13,500 persons and an average summer week-end population of 27,000 persons.

CHAPTER IV

CAROLINA BEACH AND HURRICANES

Carolina Beach, located in midst of the hurricane belt, cannot deny their reality and can continue to anticipate them during each hurricane season. Although Carolina Beach may secure a few years of relative freedom from damaging storms and hurricanes, it is inevitable that one of nature's fiercest storms will eventually strike the area causing extensive damage. A general estimate is that Carolina Beach may continue to expect an average of one hurricane every five years, not to mention the many storms with high wind damage during that same five year period.

Two separate maps have been prepared to indicate the different characteristics of hurricane damage and protection. The first map, "Areas Vulnerable to Hurricane Forces" has been prepared to show the areas of Carolina Beach which are affected by high water, waves and wind. Wave action is naturally located along the ocean front. Flood action, on the other hand, receives some of its impetus from the ocean side, but is primarily caused by the increased tides coming into Myrtle Sound, and the increased rainfall accompanying the hurricane. Rainfall accumulates all over town, but especially around Carolina Lake into which it drains. Since high wind action affects every part of town equally, it is impossible to suggest one area more vulnerable than another.

The second map, "Foundation Characteristics" indicates the type of foundation for all structures along the ocean front and in the central part of town. It indicates the rather low percentage of structures which are constructed on pilings even on the ocean front, where wave and water damage are most evident in storms.

After the destructive hurricanes of 1954, a special report was prepared at the Governor's request entitled "North Carolina Hurricane Project". And during the last year the Corps of Engineers of the United State Army prepared a combined "Hurricane and Beach Erosion" report of Carolina Beach and vicinity. The following quotations from these reports summarize the character of hurricanes.

"In the period from 1879 through 1955 at least 270 tropical storms reached hurricane intensity in the entire Caribbean and Atlantic areas; of these 67 approached near enough to the coast of North Carolina to pose a serious threat to the State. Thirty-six of the threatening hurricanes actually hit the coast, some moving inland and damaging areas as far west as Raleigh. In the 76 years for which records are available, there has been an average of about one hurricane every two years which actually struck some part of the State! (North Carolina Hurricane Report)

"Available records indicate that a total of 54 hurricanes have affected the area of Carolina Beach and vicinity during the twentieth century. Of this total, 22 hurricanes have been classified as major or moderate because of the manner in which they affected the study area. The great variation in possible hurricane direction and path means that no portion of North Carolina's coastline is free from the threat of hurricanes. Any section of the coastal area may find itself at the same time exposed to the dangerous right front quadrant of an intense hurricane" (Corps of Engineers Report)

In talking about hurricane damage at beaches, the North Carolina Hurricane Project Report goes on to say, "The major portion of the damage was caused by the interaction of many factors, some of them man-made, to which were added the destructive force of floods and wind. Many hundreds of low buildings along the water's edge were destroyed as a result of flooding, undermining of foundations, and battering of heavy waves and water borne debris. The foundations of many buildings were undermined to the extent that they collapsed completely. Much of the destruction could have been prevented through proper placement and construction of buildings.

"Man-made destruction of the sand dunes was a major cause of much of the damage. Where dunes had been allowed to erode away or had been levelled by bulldozers to provide building sites and direct views of the ocean, the high tides pushed by the hurricanes were able to wash across the protecting barrier beaches, destroy structures, and further erode the dunes and beaches. Beach erosion was most severe in those places where the slope of the beach was too steep to allow the waves to spend their energy gradually.

"A gradual beach slope above the normal high tide line is most dramatically effective in times of severe storms and hurricanes. A gentle beach slope absorbs the energy of high storm waves gradually. Waves can roll up the slope and come to the point of reverse direction easily, rather than tearing and smashing at a steep slope of the ground above the high tide line.

"Poor subdivision platting which permitted lots and streets to be laid out too near the water's edge and without adequate space for a gently sloping beach or a stabilized sand dune was responsible for much of the damage. Adequate subdivision and land-use controls are lacking in many intensively developed beach areas. Over exploitation of land resources has enhanced nature's power to destroy!"

The most damaging characteristics of hurricanes are the combination of high water and high waves. "The major damage in shore areas can be attributed to tidal flooding as a result of the wind setup and wave action. The rise of the water level along the coast is caused by the tide, induced by the high wind, being super-imposed on varying stages of the gravitational tide.

"Cities and towns in areas of potential hurricane flooding must realize that the floods themselves cannot be prevented. Hurricanes will continue to push high tides through openings in the Outer Banks or across the width of the sounds or up the length of the rivers and bays. Protection

from flooding, however, can be obtained through the construction of protective works or the construction and use of buildings and facilities so that damage from flooding will be minimized, or by restricting construction vulnerable to flood damage to high, safe ground, or by the appropriate combination of the several methods!" (Corps of Engineers Report)

A United States Forest Service report, "Observations to Damage to Houses by High Winds, Waves, and Floods and Some Construction Precautions!" indicates that inspection of houses in the wake of hurricanes, other severe wind storms and floods has afforded a dramatic means of observing both structural strong points and weaknesses. Poorly constructed build-up, regardless of materials used, is the principal source of loss in storm areas. While it is probable that no type of construction can be expected to be immune to the full force of a tornado, investigation has shown that much damage inflicted by severe storms could be prevented or at least minimized by employing the basic principles of good construction. Construction based on requirements of an adequate building code can effectively withstand wind and water with a minimum of damage. Adequate ties between foundation, floor system, walls and roof are cited as among the most effective ways to strengthen a house against wind and water damage; and means of securing such ties, including toenailing of walls, to sills and the use of strapping and commercial metal framing members are necessary. Besides minimum design standards, an adequate building code should prohibit the construction of buildings below a minimum elevation above sea level!"

These reports indicate that there is nothing that Carolins Beach can do to change the inevitability of hurricanes, but there are some things which it can do to limit the extent of damage to developments from high winds, water and waves.

In order to limit the amount of damage to structures from high winds it is recommended that construction methods be improved to withstand high winds. As the Forest Service report indicated, construction methods are the primary contributing factor to damage. Better construction could be secured by amending the Carolina Beach Building Code to include wind resistant construction methods. An amendment to the code has been prepared with the help of the North Carolina Insurance Department based upon the more detailed recommendations of the State Building Code. This amendment, which requires all buildings within the city limits to provide better construction methods in order to withstand wind damage, is contained in this report as Appendix A.

In order to limit damage to structures from high waves it is recommended that all buildings on the beach front be constructed upon pilings which would form a secure foundation. The proposed amendment to the building code as contained in Appendix A contains the requirement that all structures facing the beach in the area where wave action will injure foundations be constructed on pilings.

Limiting the damage to structures from flooding is a much more complicated problem as it has many different characteristics. It is possible either to prohibit the construction of buildings

FOUNDATION CHARACTERISTICS CENTRAL BUSINESS & BEACH FRONT AREA 1959

CAROLINA BEACH PLANNING COMMISSION

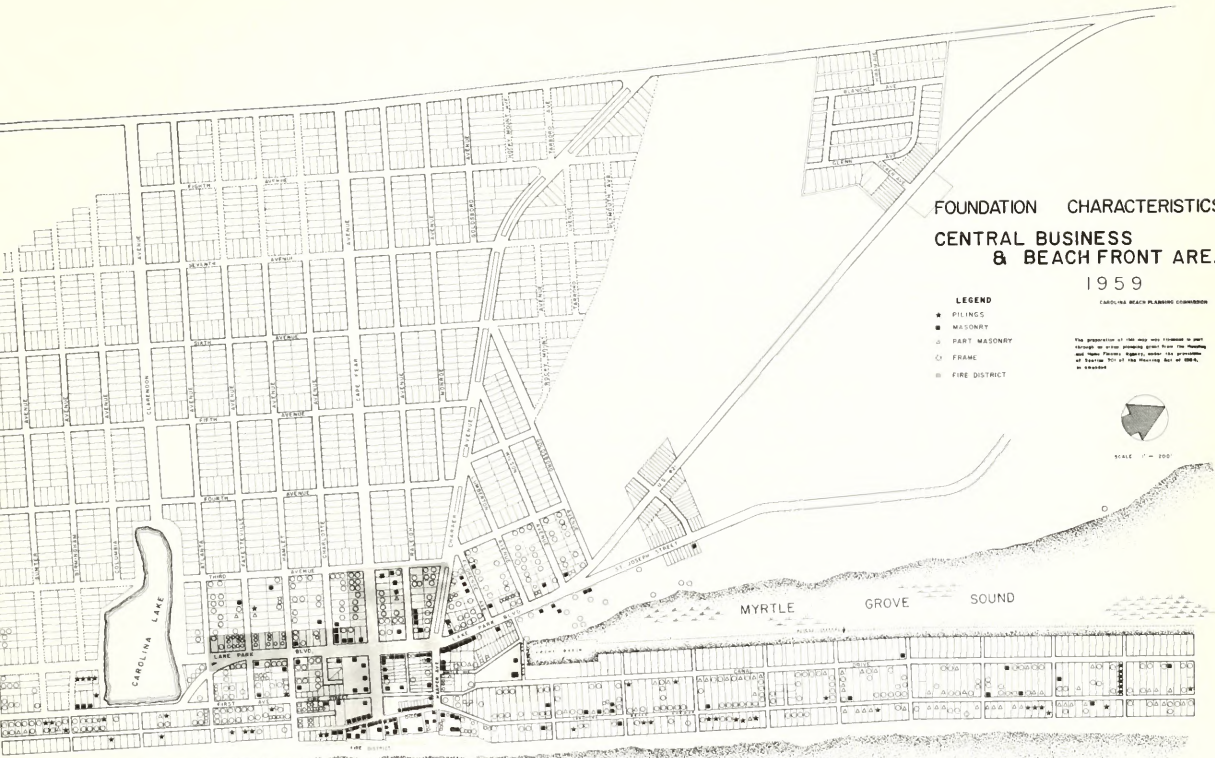
LEGEND

- PILING
- MASONRY
- PART MASONRY
- FRAME
- FIRE DISTRICT

THE INFORMATION ON THIS MAP WAS OBTAINED IN 1957 THROUGH AN AERIAL PHOTOGRAPHIC SURVEY OF BUILDING AND FOUNDATION TYPES. THEREFORE, THE ACCURACY OF THE INFORMATION IS NOT GUARANTEED BY THE PLANNING COMMISSION.



SCALE 1" = 200'



CAROLINA BEACH

in the area subject to flood or to require that buildings be constructed on pilings at a level above the maximum flood stage; it might also be possible to protect the areas from flooding by means of sea walls and levees.

The manner in which the area subject to flood is developed at this time indicates that not one but all of the specific solutions to the problem of flooding should be taken, according to the specific circumstances. As shown on the map, "Areas Vulnerable to Hurricane Forces" flooding to different depths affects the greater part of the Town of Carolina Beach. Certainly any suggestion that the Central Business District buildings be raised onto pilings or that construction in all this area be prohibited will meet with severe criticism and disbelief. Most citizens are willing to take their chances since this is the heart of town and since flooding does not take place in time or depth sufficient to warrant immediate changes.

The extent to which the proposals for beach stabilization by the Corps of Engineers will affect the flooding within the city is impossible to determine at this time. If the proposal for the construction of a berm along the entire beach front is authorized by Congress there is reason to believe damage from flooding may be reduced. This may be true especially if the material for the construction of the berm is taken from Myrtle Sound in such a manner as to develop it as a more stable body of water.

Although in great part it is difficult to recommend one specific overall solution to the problem of flooding within Carolina Beach, it is suggested that the Town of Carolina Beach protect and improve drainage structures throughout the city and that efforts be made to raise the height of the Myrtle Beach shore line, especially on the eastern shore.

CHAPTER V

LAND DEVELOPMENT RECOMMENDATIONS

The future development problems of Carolina Beach are divided into four general planning areas: Carolina Lake, the beach, the Central Commercial Area, and Myrtle Sound. Each of these areas is very closely related to the other so that circulation between them is highly important. Recommendations for the future development of Carolina Beach are suggested for these different areas as follows and shown on the map "Carolina Beach Development Plan"

Carolina Lake

It is recommended that Carolina Lake be deepened and reduced in size so that part of the lake area to the west could be reclaimed for development as recreational land. Additional property should be bought adjacent to this area in order to make it large enough to provide all the needed recreational facilities for the permanent population. These should include a baseball field as well as land for other free play and for parking. Another area to the south of the lake should be developed for a quiet area and activities and oriented toward the needs of retired people.

It is recommended that property on the north side of the lake be secured and developed for an open air theater facing the lake for different community events, such as bathing beauty contests, religious services, plays, community sings, and the like. Below this area a small amusement area could be developed for electric boats, roller skating on a smooth pavement and a small shelter. These activities would need ample parking provided along Atlanta Avenue.

It is recommended that a water jet be provided in the middle of the lake shooting water into the air one hundred feet or so and that changing colored lights be focused upon this water jet. This jet which should be located in line with Lake Park Boulevard, would provide Carolina Beach with a symbol of identity which every visitor would remember.

The southern shore of the lake would be left open without development except for pedestrian ways and benches on which persons might sit and watch the activity within the area.

Beach Development

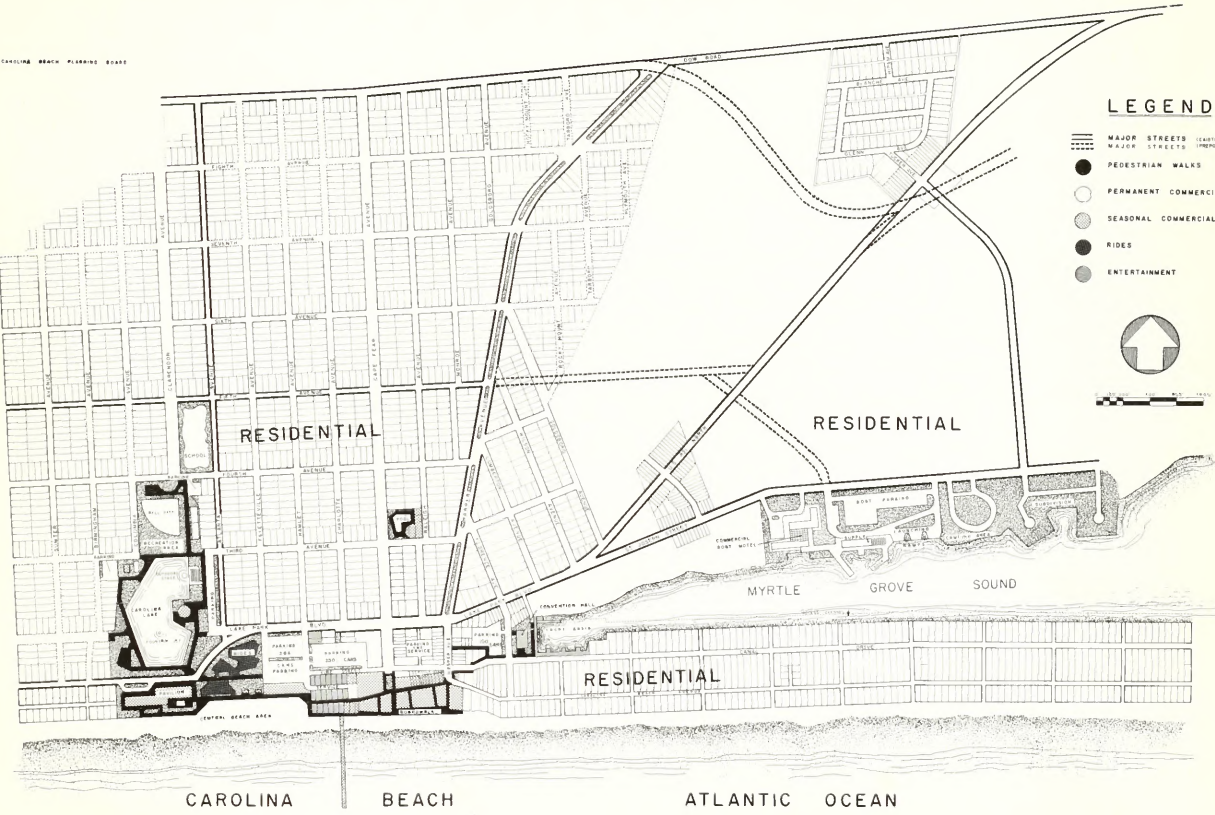
The present beach area is extremely narrow, and lifeguard space is limited to one specific area in front of the Central Business District. It is recommended that the center of swimming activity be extended to a recreation pavilion located east of the lake on the beach front. This beach pavilion should house all the beach services necessary for the immediate area, such as bath house, amusements, food and refreshment stands, etc.

CAROLINA BEACH DEVELOPMENT PLAN

CAROLINA BEACH PLANNING BOARD

LEGEND

-  MAJOR STREETS
-  MAJOR STREETS (IMPROVED)
-  PEDESTRIAN WALKS
-  PERMANENT COMMERCIAL
-  SEASONAL COMMERCIAL
-  RIDES
-  ENTERTAINMENT



CAROLINA

BEACH

ATLANTIC OCEAN

Since a large majority of the persons coming to the beach do not go near the water but spend their time in the sun, it is recommended that the beach be recessed from Hamlet to Atlanta Avenue to provide a much larger central beach. To recess the beach the existing street would have to be blocked off and made into a pedestrian way. This large beach area would also be located close to the proposed parking lots.

The widening of the central beach area is extremely important to the future growth of the Central Business District. If the beach is not widened and parking provided, people will start going to other locations along the ocean front.

Central Business District

The major problems in the Central Business District are as follows: there is no separation of incompatible uses, development is too dense, circulation and parking are inadequate and the visual character of the development is extremely poor. In order to solve these many problems, the following recommendations are made:

The creation of large parking lots is essential to the future development of the Central Business District. Parking lots have been designated in a central location so that they can easily serve the business district, beach area and amusement area. Two large parking lots are recommended in the blocks east of Lake Park Boulevard between Hamlet and Fayetteville Streets. Other parking lots and truck servicing areas are recommended behind the business development in the block east of Lake Park Boulevard between Cape Fear Boulevard and Hamlet Avenue and between Harper Avenue and Cape Fear Boulevard.

It is recommended that the loud, noisy and gay land uses such as beer halls and dance halls be developed within the area east of Kure Street between Cape Fear Boulevard and Hamlet Avenue. This area would include other commercial amusements such as rides but would be the only area in which dance halls and beer parlors would be allowed. This would provide a separation of the noisy uses from other commercial and residential type uses within the Central Business District.

It is recommended that the street and parking area at the foot of Cape Fear Boulevard be made into a pedestrian rest area with shaded benches and public toilets. The area should be filled in and planted with trees and shrubs native to the area so that benches for sitting and resting could be installed. Several off-street loading spaces should be allocated in the area for trucks servicing commercial uses.

It is recommended that City Hall be relocated central to the lake, beach, and amusement area; such a possible location is suggested on the east side of Lake Park Boulevard in the vicinity of Hamlet Avenue.

It is recommended that the suggested convention hall be located at the present site of the City Hall and constructed on pilings in order to insure against flooding and also in order to take advantage of the beautiful vistas up Myrtle Sound and through the houses to the ocean. The area adjoining the convention hall should be developed for parking which would serve the city dock as well.

It is recommended that when sufficient demand can be established, a swimming pool be located in the block where the city water tank is located at the present time. This area is centrally located and within walking distance of most of the permanent residences. This would not break into a residential area since some of the adjoining uses are of a commercial nature.

Myrtle Sound

The development of Myrtle Sound is closely tied up with other development problems of the beach. At present there is only an extremely small channel which is crowded with all sorts of water activities. The entire sound needs to be dredged out so that water skiing, boating and other activities could take place as well as to increase the area for boat docking. There is a possibility that this dredging could be done at the same time the beach erosion work is done by utilizing the material in the sound to build up the beach. Carolina Beach should make every effort to coordinate these activities if possible.

It is recommended that the city dock be utilized primarily for commercial type craft and that small boat and private docking be located to the north on the west shore of the sound. The present dock needs to be expanded, and parking facilities serving the dock should be expanded to accommodate all those persons who come down in the afternoons to see the boats come into the harbor.

It is recommended that a boat dock and launching ramps be developed on the west side of Myrtle Sound further to the north and that these docks have ample car and trailer parking spaces, and boat storage lots. The following publications provide information on all phases of the marina development: "Boat Handling Equipment in the Modern Marina"; "The Modern Marina"; "Marinas-Recommendations for Design, Construction and Maintenance"; (all three publications available from the National Association of Engine and Boat Manufacturers, Incorporated); and "Outboard Marinas - America's Growing Need" (Available from the Outboard Boating Club of America, 307 North Michigan Avenue, Chicago, 1, Illinois).

It is recommended that a commercial area be provided for a boat and car motel in the vicinity of the small boat dock in order to provide housing facilities for fishermen, tourists, and Inland Waterway boat traffic.

It is recommended that a tent and trailer area be developed along the west banks of Myrtle Sound north of the waterway. There are numerous tourists who wish to camp out and who are willing to pay a nominal sum for camping in nicely developed areas. Central facilities for washing and toilet facilities should be provided and fees collected for their development and maintenance.

The west side of the sound should also be developed with residential subdivisions providing boat channels. Channels could be dug into the mainland, especially along major drainage ways which provide boat access to residential property. This type of development would prove especially popular to permanent residents who might work in Wilmington.

Circulation

Consideration of the circulation of people, whether on foot or in vehicles, is going to be an important part of any future development. Carolina Beach has a number of different functional areas which must be adequately related and tied together. The beach, amusement area, boat dock, proposed convention hall, proposed pavilion and the Central Business District, all need to be closely connected by means of streets and sidewalks. A necessary part of this circulation will be the service areas for truck loading and unloading and the off-street automobile parking lots.

It is recommended that the Preliminary Major Street Plan as shown on the accompanying map be coordinated with the Development Plan. It indicates the primary and secondary streets which need to be improved in order to handle future traffic adequately. This preliminary plan after adequate consideration and approval by the City Council should be sent to the State Highway Commission for approval and adoption as required under State Statutes.

The Preliminary Major Street Plan indicates three major streets with a minimum right-of-way of eighty feet providing major circulation routes north and south through Carolina Beach. Three other streets, Spartanburg, Atlanta and Harper with minimum eighty foot rights-of-way are suggested to serve east and west traffic from Dow Road to the Beach. Lake Park Boulevard and Highway 421 will continue to serve traffic entering into Carolina Beach and going south to Fort Fisher.

In order to improve vehicle circulation, it is recommended that as many activities as possible be restricted from the north shore of Carolina Beach. This area is inadequately serviced with roads having only one narrow two-way traffic street, Canal Drive, and one narrow one-way traffic street, Carolina Beach Avenue. In order to help circulation on the northern beach area, it is recommended that Florence Street be extended through to Carolina Beach Avenue and that Myrtle Avenue be closed. It is suggested that Kure Street be widened and made a one-way street from Florence to Hamlet Street, where it would stop at the parking lots. It is also recommended that the lower half of King Street between City Hall and the City Dock be closed because of the congestion in this area and so that a pedestrian way might be provided from the dock area into the Central Business District.

A great part of Carolina Beach is going to have to depend upon people who walk from their summer homes or from their cars in parking lots. Existing streets are crowded during days of good attendance at the beach, and there is little reason to believe that these same streets can handle the 11,000 more people who will be crowding into the area in the future. In order that the beach, amusements and

CAROLINA BEACH

PRELIMINARY MAJOR STREET PLAN

RECOMMENDED RIGHTS - OF - WAY MINIMUM RIGHTS - OF - WAY

- 60 FT R-O-W
- 80 FT "
- 100 FT "
- ===== CLOSED
- ← ← ← ← ONE-WAY

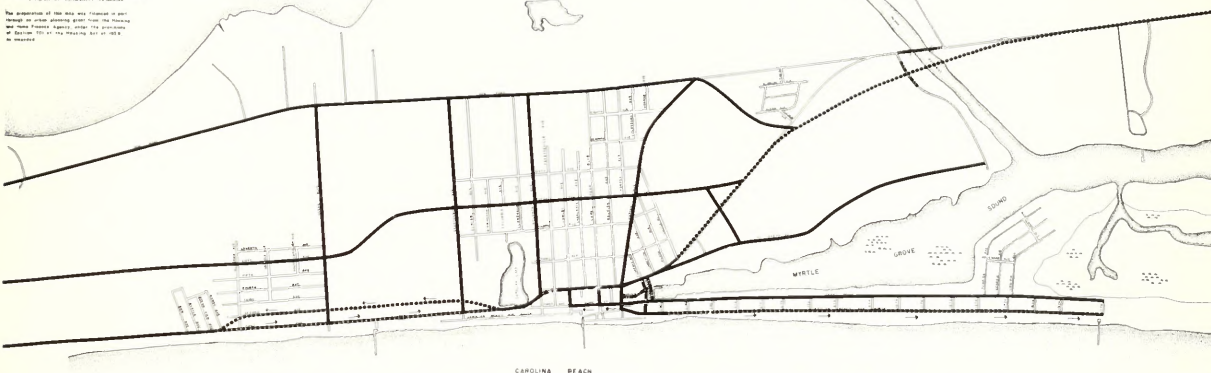
SCALE 1" = 500'



CAPE FEAR RIVER

PREPARED FOR
CAROLINA BEACH TOWN PREPARATION
BY THE
DEPARTMENT OF CONSTRUCTION AND DEVELOPMENT
CITY OF CAROLINA BEACH

The construction of this map was prepared as part
of a study of the area shown on this map. The
map shows the proposed street layout and the
location of the proposed streets. The location
of the streets is shown on the map and is
not intended to be a final plan.



WANDY BEACH WILMINGTON BEACH

CAROLINA BEACH

ATLANTIC OCEAN

commercial areas will have adequate opportunity to attract and serve the vacationer, walks or pedestrian ways should link the entire area. It is recommended that pedestrian ways as noted on the Development Plan run from the dock area at Myrtle Sound all the way through the business district to the Carolina Lake recreation area.

Implementing the Development Plan

It is always easy to make suggestions and recommendations of different projects the city and its citizens should provide, but it is not as easy to really get them done. As the old saying goes, "talk is cheap"; however, the town's limited financial ability also needs to be considered. More important than finances, though, is the fact that many of the recommendations for the future development of Carolina Beach takes cooperation and working together, which is probably the last things the people of Carolina Beach have been noted for in the past. The recent town efforts and cooperation in planting palm trees is an encouraging sign.

Since there are many different elements to the Development Plan, each part can be developed by different means. In this way, with everyone working toward his particular part of the plan, a better and more efficient development can be accomplished for the entire beach.

The following recommendations are made for the accomplishment of the Development Plan:

- (1) Recreation Plans - It is recommended that the Town Recreation Commission assume the responsibility for leadership in the development of the recreation facilities. It would be encouraging to see private donations matched by town funds used toward the development of these facilities.
- (2) Parking Lots - It is recommended that the Town Council establish a Parking Commission Authority for Carolina Beach which would operate under State Statutes to purchase and develop land for city parking facilities and recommend regulations for on street parking.
- (3) Amusement Plans - It is recommended that the citizens of Carolina Beach with the cooperation of the Town Council establish an Amusement Authority responsible for purchasing and developing land to be designed and leased for additional beach area, the proposed pavilion and convention hall and the centralized development of amusements adjacent to Carolina Lake.
- (4) Building Code - It is recommended that the Town Planning Commission recommend to the Town Council the proposed amendment to the Building Code for Hurricane Resistant Construction. (See Appendix A).

- (5) Zoning Ordinance - It is recommended that the Planning Commission recommend to the Town Council the proposed amendment to the Zoning Ordinance. The proposed amendments to the Zoning Ordinance are provided to guide everyday construction activities according to the Development Plan as outlined herein.
- (6) Major Street Plan - It is recommended that the Preliminary Major Street Plan be submitted to the State Highway Commission for approval.

APPENDIX A

PROPOSED AMENDMENT TO THE BUILDING CODE OF THE TOWN OF CAROLINA BEACH TO PROVIDE FOR HURRICANE RESISTANT CONSTRUCTION *

WHEREAS, as a result of the extensive property damage caused by hurricanes it is the opinion of this governing body that an amendment to the Building Code is necessary for the protection of life and property from future hurricanes and storms and,

WHEREAS, the construction requirements provided by this amendment will materially reduce the possibility of extensive property damage in the event of future hurricanes, severe storms and unusually high water and therefore promote the safety and general welfare of this community, NOW THEREFORE, be it ordained by the Board of Commissioners of the Town of Carolina Beach, North Carolina.

Section 1.0 General Construction. The Building Code of the Town of Carolina Beach is hereby amended to include as additional requirement to the present code the following:

- 1.1 Every other rafter shall be anchored to the ceiling joists or partitions directly beneath by metal ties or timber framing anchors which shall be attached to the rafters at their mid-points or at the third points if two are used per rafter. In peaked roofs opposite rafters shall be laterally braced to each other at the ridge by no less than the equivalent of 1 x 6 inch boards securely nailed.
- 1.2 All structural roof members shall bear directly over vertical supports to which they are tied.
- 1.3 Roof structures shall be securely anchored to the footing by 5/8 inch steel rod, no more than 12 feet apart for frame structures and no more than 8 feet apart for masonry structures, one of which shall be no more than 2 feet from each corner. Equal or better methods of tying roof structures to foundations designed for a specific building by a registered engineer or registered architect may be accepted by the building inspector, with the approval of the Planning Commission.
- 1.4 All girders, i.e, large beams into which smaller joists are framed, resting on masonry foundation walls or piers shall be anchored to the footing with 5/8 inch steel rod embedded at least 6 inches therein.
- 1.5 Where wood partitions and masonry walls join, the stud abutting the masonry shall be doubled and bolted to the masonry with three 1/2 inch galvanized bolts, one to be embedded in the

* THESE REGULATIONS SHOULD BE SUBMITTED TO THE CITY ATTORNEY FOR LEGAL CONSIDERATION BEFORE COUNCIL ACTION.

tie beam, one in the mid-section, and one near the base. The end of the partition plate shall also be anchored to the stud abutting the wall and to the wall plate.

- 1.6 Wooden columns and posts shall be anchored with metal ties and bolts to their foundations and to the members which they support.

Section 2.0 Roof Coverings. The Building Code of the Town of Carolina Beach is hereby further amended to include as additional requirements to the present code the following:

- 2.1 Nails, clips and similar attaching devices shall be galvanized or otherwise suitably corrosion resistant.
- 2.2 Wood roof decks to which composition or roll roofing is attached shall be solidly sheathed.
- 2.3 All butts or tabs of asphalt shingles shall be securely spotted or tabbed with a plastic fibrous, asphaltic cement, or anchored by clips or locks. The use of seal-o-matic roofing may be used as the equivalent of this requirement.
- 2.4 Where two or more layers of roll or built-up roofing are applied the deck shall be thoroughly mopped before the anchor sheet is nailed to the sheathing with nails not over 12 inches on center in each direction. Each additional sheet above the anchor sheet shall be thoroughly mopped and finished with corrosion resistant capping.
- 2.5 Shingles should be applied to a solid or closely fitted deck. Shingles shall not be applied or nailed on top of existing wooden shingles nor shall they be applied over more than one layer of asphalt shingles.
- 2.6 The following roofing materials shall be prohibited: corrugated metal roofing, protected metal roofing, corrugated and flat sheet asbestos cement roofing, insulated steel deck roofing.

Section 3.0 Piles Required. The Building Code is hereby further amended to read as follows:

- 3.1 In the area of east of Carolina Beach Avenue and Carolina Beach Avenue south, except within the fire zone, all new structures and all structures rebuilt or repaired where the structure requires a new foundation or where rebuilding or relocating a building on existing foundations is necessary, shall be built upon piles in accordance with the following requirements:
- 3.2 Type of pile. Wood piles, reinforced concrete or steel piles may be used. Wood piles shall be in one piece, and shall be of Southern Pine, Douglas Fir or other approved wood. Piles shall be free of short kinks and shall have a uniform taper from end to end. The

tops of all wood piles shall be sawed off clean along a horizontal plane. Reinforced concrete or steel piles may be used if made and installed in accordance with accepted good building practice.

- 3.3 Required depth of piles. Piles shall be sunk or buried to a depth of not less than 8 feet below the center line of Carolina Avenue.
- 3.4 Size of wood piles. Round timber piles shall not be less than 8 inches in diameter at building level or at the building end. Squared timber piles shall not be less than 8 inches square, nominal.
- 3.5 Spacing of wood piles. The maximum center-to-center spacing of wood piles shall not be more than eight (8) feet on centers under weight bearing sills. However, for two story or larger buildings or where the load bearing requirements demand it, piles may be required to be spaced closer together by the building inspector.
- 3.6 Tying and bracing of wood piles. Wood piles shall be tied to the structure with 5/8 inch steel bolts. Each pile shall be properly braced in an approved manner and when timber braces are used the recommended size shall be 4" x 4".
- 3.7 Wood piles treated. All wood piles shall be treated except when the type of wood pile in the opinion of the building inspector requires no treatment. Treatment of piles shall be substantially as follows:

Piles shall be pressure treated by an empty-cell process with grade one coat tar creosote to a net final retention of not less than 12 pounds of creosote per cubic foot of wood.

Section 4.0 Application of Ordinance. Sections 1 and 2 of this Ordinance amending the building code of the Town of Carolina Beach shall apply to all new structures and to those portions of existing structures repaired, rebuilt or remodeled after the effective date of this Ordinance. Section 3 of this Ordinance shall only apply to the area as set forth in Section 3 above.

Section 5.0 Repealing Clause. All Ordinances or parts of Ordinances in conflict with this Ordinance are hereby repealed.

Section 6.0 Effective Date. This ordinance shall be in full force and effect from and after the day of _____, 1960.

Attest:

Town Clerk

STATE LIBRARY OF NORTH CAROLINA



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